

CLAIMS

We Claim:

1. An optical switch for switching light signals coming from three input fibers among three output fibers, comprising:

a collimator aligning with each of the input and output fibers for collimating input or output light; and

a moveable switching element comprising:

a three-surface mirror having three reflecting surfaces; and

three reflectors, one mounted opposite each reflecting surface of the three-surface mirror; whereby, the switching element is moveable between three different position, and when light signals are transmitting from the input fibers, they transmit directly to a corresponding output fiber, or are reflected between one reflecting surface and one reflector to be output by one of the other two output fibers.

2. The optical switch as claimed in claim 1, wherein the switching element is able to move into or out of or to rotate within a space surrounded by the collimators.

3. The optical switch as claimed in claim 2, wherein each one input fiber is opposite to one corresponding output fiber, whereby light beams from each one input fiber can be output by the corresponding opposite output fiber when the switching element is in one of its three positions.

4. The optical switch as claimed in claim 1, further comprising a driver, which drives the switching element to move between its three positions.

5. An optical switch for switching light signals coming from three input fibers among three output fibers, comprising:

a collimator aligning with each of the input and output fibers for collimating input or output light; and

a moveable switching element comprising four reflectors, wherein the four reflectors are parallel to each other, whereby the switching element is moveable between three different positions and when light signals are transmitted from the input fibers, they transmit directly to a corresponding output fiber, or are reflected between two of the four reflectors to be output by one of the other two output fibers .

6. The optical switch as claimed in claim 5, wherein the four reflectors are able to move into or out of or to rotate within a space surrounded by the collimators.

7. The optical switch as claimed in claim 6, wherein one input fiber is aligned with one opposite output fiber, whereby light beams from one input fiber can be output by a corresponding opposite output fiber in each of the three different positions of the switching element.

8. The optical switch as claimed in claim 5, further comprising a driver, which drives the switching element to move between its three positions.

9. An optical switch for switching light signals coming from at least two input fibers among at least two output fibers, comprising:

at least two main reflecting surfaces, each main reflecting surface being in an optical path between one input fiber and one output fiber; and

at least two secondary reflecting surfaces, each secondary reflecting surface being opposite to one main reflecting surface to connect an optical path from one input fiber to one output fiber.

10. The optical switch as claimed in claim 9, wherein light beams from the input fiber reflected twice off the main reflecting surface.

11. The optical switch as claimed in claim 10, wherein light beams from the input fiber reflected once off the main reflecting surface, then reflect once off the secondary reflecting surface, then reflect a second time off the main reflecting surface then are output by the output fiber.

12. An optical switch comprising:

plural pairs of input ports and output ports substantially at equal intervals arranged along a circumference surrounding at least a moveable switch therein;

said switch providing a plurality of reflecting surfaces; wherein

when no switch is provided, light coming from one input port leaves from the corresponding output port which is aligned with said input port diametrically; when the switch is provided, at least one reflected light coming from at least one input port leaves from the corresponding output port, which is a neighbor of said at least one input port, via at least one reflection on at least one of said reflecting surfaces.

13. The optical switch as claimed in claim 12, wherein there are at least three pairs of input ports and output ports evenly arranged along the circumference.

14. The optical switch as claimed in claim 12, wherein the reflected light experiences three times reflection via said switch before entering the corresponding neighboring output port.

15. The optical switch as claimed in claim 12, wherein the input ports and the output ports are alternately arranged along said circumference.

16. The optical switch as claimed in claim 12, wherein all lights coming from the corresponding input ports are reflected by said switch when said switch is provided.

17. The optical switch as claimed in claim 12, wherein only some lights coming from the corresponding input ports are reflected by said switch when said switch is provided.